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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FRANCISCUS GERARDUS JOHANNES CLAASSEN

Appeal 2009-002109
Application 10/623,906¹
Technology Center 2800

Decided: August 21, 2009

Before JOHN C. MARTIN, MARC S. HOFF, and BRADLEY W. BAUMEISTER, *Administrative Patent Judges*.

HOFF, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

Appellant appeals under 35 U.S.C. § 134 from a Final Rejection of claims 1, 2, 7-11, and 16-20.² We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ The real party in interest is Xerox Corporation.

² Claims 3-6 and 12-15 have been cancelled.

Appellant's invention relates to a power supply producing multiple DC output voltages. A main circuit supplies a first predetermined voltage, and a secondary circuit supplies a second predetermined voltage (Spec. 3). A preload circuit provides a preload on the main circuit in case the secondary circuit goes out of control (Spec. 5).

Claim 1 is exemplary of the claims on appeal:

1. A power supply accepting a mains voltage as an input and outputting a first predetermined voltage from a first terminal and a second predetermined voltage from a second terminal, comprising:

 a main circuit for deriving the first predetermined voltage from the mains voltage;

 a secondary circuit for deriving the second predetermined voltage from the main circuit, the secondary circuit including a post regulator circuit including a magamp controller; and

 a preload circuit applying a preload on the main circuit as a result of the secondary circuit going out of control, the preload circuit including an output directly to the second terminal and an input from the magamp controller.

The Examiner relies upon the following prior art in rejecting the claims on appeal:

 Wright US 5,479,087 Dec. 26, 1995

 Chapman US 6,370,354 B1 Apr. 9, 2002

Claims 1, 2, and 7-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wright.

Claims 16-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wright in view of Chapman.

Throughout this decision, we make reference to the Appeal Brief ("App. Br.," filed June 4, 2007) and the Examiner's Answer ("Ans.," mailed December 13, 2007) for their respective details.

ISSUE

Appellant argues that Wright does not render the claimed invention obvious because Wright's alleged "coupled-inductor" topology does not provide a teaching relevant to the claimed invention (Br. 5). Appellant further argues that Wright's Figure 1B shows magamp control of only one output, whereas the claimed invention recites effective magamp control of two outputs (Br. 6), and that Wright teaches away from the use of a magamp controller for controlling two outputs (Br. 7). Finally, Appellant argues that Wright does not teach applying a preload on the main circuit as a result of the secondary circuit going out of control (Br. 7).

Appellant's contentions thus present us with the following issue:

Has Appellant shown that the Examiner erred in concluding that it would have been obvious to modify the embodiment shown in Wright's Figure 3 to include the magamp controller of Wright's Figure 1B as the post regulator circuit for the secondary circuit?

FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

The Invention

1. According to Appellant, the invention concerns a power supply producing multiple DC output voltages. A main circuit supplies a first predetermined voltage, and a secondary circuit supplies a second predetermined voltage (Spec. 3). A preload circuit provides a preload on the main circuit in case the secondary circuit goes out of control (Spec. 5).

2. An "out of control" situation can arise when the first terminal experiences a relatively low load and the second terminal experiences,

simultaneously, a relatively high load. The secondary circuit is out of control when a further change of an error signal does not result in a change of the controlled power supply output, such as on terminal 22 (Spec. 4).

3. The overall function of preload circuit 50 is to apply a preload on the main circuit in case the secondary circuit goes out of control. The extra preload on the first output terminal 20 increases the voltage on the secondary transformer winding 40, and the extra preload current of the first output terminal is fed into the second output terminal 22 and therefore not lost. In this way, a condition in which a low load is experienced by the main circuit while a high load is experienced by the secondary circuit does not result in an out of control situation for the secondary circuit (Spec. 5).

Wright

4. Wright's Figure 3 teaches a switching converter that provides +12V and +5V signal outputs.

5. Synchronized switch 169 draws excess current, and thus power, from the +12V signal to the +5V signal when the +12V signal is under little or no load (col. 10, ll. 48-50).

6. Wright teaches that the magnetic amplifier regulator of Figure 1B is "very costly" and "suffers from a very high parts count" (col. 3, ll. 31-33).

7. Figure 1B of Wright shows a magnetic amplifier (magamp) regulator used to regulate one output of a multi-output power supply (col. 2, ll. 36-39 and col. 3, ll. 10-34).

Chapman

8. Chapman teaches a printing apparatus providing very accurate synchronization between cut sheet print media and the unfixed image (Abstract).

PRINCIPLES OF LAW

“A rejection for anticipation under section 102 requires that each and every limitation of the claimed invention be disclosed in a single prior art reference.” *See In re Buszard*, 504 F.3d 1364, 1366 (Fed. Cir. 2007) (quoting *In re Paulsen*, 30 F.3d 1475, 1478-79 (Fed. Cir. 1994)).

Anticipation of a claim requires a finding that the claim at issue reads on a prior art reference. *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1346 (Fed. Cir. 1999) (quoting *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 781 (Fed. Cir. 1985)).

On the issue of obviousness, the Supreme Court has stated that “the obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). Further, the Court stated “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 416. “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 419-420.

The determination of obviousness must consider, *inter alia*, whether a person of ordinary skill in the art would have been motivated to combine the prior art to achieve the claimed invention and whether there would have

been a reasonable expectation of success in doing so. *Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 229 F.3d 1120, 1124 (Fed. Cir. 2000). *Medichem S.A. v. Rolabo S.L.*, 437 F.3d 1157, 1164 (Fed. Cir. 2006). Where the teachings of two or more prior art references conflict, the Examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another. *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984). Further, our reviewing court has held that “[a] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994); *Para-Ordnance Mfg. v. SGS Importers Int’l*, 73 F.3d 1085, 1090 (Fed. Cir. 1995).

ANALYSIS

CLAIMS 1, 2, AND 7-11

We select claim 1 as representative of this group of claims, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

The Examiner finds that Wright’s Figure 3 embodiment teaches a power supply outputting a first and second predetermined voltage from respective first and second terminals, including a main circuit for deriving the first predetermined voltage (+12V) from the mains voltage; a secondary circuit for deriving the second predetermined voltage (+5V), the secondary

circuit including a post regulator circuit (Wright col. 9, ll. 22-67) and a preload circuit (synchronized switch 169) applying a preload on the main circuit as a result of the secondary circuit going out of control, the preload circuit including an output directly to the second terminal and an input from the post regulator circuit connected to the secondary circuit (Ans. 4). The Examiner concedes that Wright does not teach that the post regulator circuit includes a magamp controller, but refers to the embodiment illustrated in Figure 1B of Wright, which shows a magnetic amplifier (magamp) regulator used to regulate an output of a multi-output power supply (Ans. 5-6; FF 7). The Examiner concludes that it would have been obvious to replace the post regulator circuitry of Figure 3 with the magamp regulator of Figure 1B “in order to provide effective regulation of the output voltage, especially in instances where the quality of output voltage regulation offered by a magamp controller was a priority over cost effectiveness” (Ans. 5).

Appellant first argues that because Wright describes a “coupled-inductor topology” in which the two outputs share the same transformer output coil, each output must change when the load on the other output changes and thus the disclosure is unrelated to magamp control of the secondary circuit (Br. 5). This argument is not persuasive to show Examiner error because it is not germane to the claimed invention. Claim 1 does not recite that the two voltage outputs are independent, or that one output does not change when the load on the other changes.

Second, Appellant argues that Wright’s Figure 1B shows magamp control of one output, whereas in the claimed invention, the magamp controller recites effective control of both outputs (Br. 6). We do not find this argument persuasive because (a) as pointed out by the Examiner, Wright

discloses that Figure 1B shows only one output leg of a multiple output switching power supply, and thus Wright shows magamp control as a known feedback method in a multiple output switching power supply (Ans. 9); and (b) under the modification proposed by the Examiner, the magamp controller *would* both have an output connected directly to the second (+5V) terminal and would provide an input to the preload circuit (via the transformer and control circuitry shown in Figure 3).

Appellant's third argument, that Wright's Figure 3 embodiment teaches away from its Figure 1B magamp controller embodiment, is also unpersuasive of Examiner error. Wright discloses only that its magamp control method is very costly and has a high parts count (FF 6). Such a disclosure is insufficient to establish that one of ordinary skill in the art would have been led in a direction divergent from the path taken by Appellant. We concur with the Examiner's rationale that one of ordinary skill in the art would still have been motivated to make the proposed modification where the quality of regulation is more important than cost considerations (Ans. 5).

Last, Appellant argues that Wright does not teach applying a preload on the main circuit *as a result of* the secondary circuit going out of control (Br. 7; emphasis added). This argument is also unpersuasive. Wright teaches that synchronized switch 169 draws excess current, and thus power from the +12V signal to the +5V signal when the +12V signal is under little or no load (FF 5). This method of operation is analogous to Appellant's description of the operation of his preload circuit:

The overall function of preload circuit 50 is to apply a preload on the main circuit in case the secondary circuit goes out of control. . . . [T]he extra preload on the first output terminal 20

increases the voltage on the secondary transformer winding 40, and the extra preload current of the first output terminal is fed into the second output terminal 22 and therefore not lost. In this way, a condition in which a low load is experienced by the main circuit while a high load is experienced by the secondary circuit does not result in an out of control^[3] situation for the secondary circuit.

FF 3. Wright thus operates to provide excess current to the secondary signal, just as Appellant discloses.

The analogous operation of Wright and Appellant's invention also serves to vitiate Appellant's argument that Wright's preload circuit does not apply a preload *as a result of* the secondary circuit going out of control. To the extent it may be argued that Wright does not wait for an out of control situation before applying a preload, the same may be said of Appellant's invention: as disclosed, "[t]he secondary circuit is out of control when a *further* change of an error signal does not result in a change of the controlled power supply output, such as on terminal 22." (FF 2; emphasis added).

Appellant has not shown error in the Examiner's rejection of representative claim 1. Thus, we will sustain the rejection of claims 1, 2, and 7-11 under 35 U.S.C. § 103(a) as unpatentable over Wright.

CLAIMS 16-20

As noted *supra*, we conclude that the subject matter of claim 1 is rendered obvious by Wright. Appellant's remarks with respect to claims 16-

³ Appellant's Specification explains that an "out of control" situation can arise when the first terminal experiences a relatively low load and the second terminal experiences, simultaneously, a relatively high load and also that the secondary circuit is out of control when a further change of an error signal does not result in a change of the controlled power supply output, such as on terminal 22 (FF 2).

Appeal 2009-002109
Application 10/623,906

20 assert only that the claims are patentable for the reasons advanced with respect to claim 1. Therefore, we will sustain the rejection of claims 16-20 under § 103, for the same reasons expressed with respect to claim 1.

CONCLUSIONS OF LAW

Appellant has not shown that the Examiner erred in concluding that it would have been obvious to modify the embodiment shown in Wright's Figure 3 to include the magamp controller of Wright's Figure 1B as the post regulator circuit for the secondary circuit.

ORDER

The Examiner's rejection of claims 1, 2, 7-11, and 16-20 is affirmed.

Appeal 2009-002109
Application 10/623,906

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

ELD

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